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ON TWO CASES OF EXCISION OF THE ASTRAGALUS FOR INJURY.

By Francis J. Shepherd, M.D.
Surgeon to the Montreal General Hospital.

The astragalus is not very frequently removed except in the course of the operation of excision of the ankle or for correcting the deformity in the severer forms of club-foot. The two cases narrated below have many points of interest. In both, injury necessitated the operation; in one case the traumatism caused dislocation with fracture, and in the other dislocation alone. Both cases resisted all efforts at reduction. In one case this was apparently due to the fact that the tendon of the *tibialis posticus* had in some way become tightly stretched over the outer surface of the astragalus and thus prevented its reduction. The case of fracture, which afterwards became compound, resulted from jumping off a train whilst in motion, and within the last few years I have seen several cases which were due to the same cause, though in all these cases the fracture was simple. The patients recovered with useful feet but stiff ankle-joints, and with some deformity. In the cases of excision the result was much better, and the patient could move about with more freedom and less limping, although there was more shortening. In the case of fracture, there was also dislocation of the anterior fragment. The character of the fracture was of interest. The astragalus was broken into three pieces, the central portion corresponding to the part covered by the lower articular surface of the tibia. The anterior portion was formed by the head and the posterior by the projecting portion of astragalus which is grooved for the tendon of the flexor longus hallucis muscle.

Case I—*Dislocation of the Astragalus, with fracture of the inner and outer malleoli of the ankle-joint.*—M. G., aged 25, a pedlar, was admitted into hospital July 10th, 1886, with the following history. On 27th May last fell out of a waggon and caught left foot in wheel; in this way twisted ankle. On being released, found foot out of place and could not walk. Twelve hours after accident, was seen by Dr. H. Stevenson of Wake-

field, Que., who, after getting foot in position, placed it in a box splint; there was great swelling. After sixteen days the foot was examined under chloroform and an attempt made to reduce the displacement, but without result. The foot was again put in box splint, in which it remained till a day or two before entrance into hospital, when it was put up in a glue bandage.

Present condition.—Patient, a small-sized, wiry-looking man, was placed under ether and examined; the foot was strongly everted, and there was a dislocation of the astragalus downwards and forwards; internal malleolus very prominent and skin red, and a small opening over it communicating with the bare bone; tendo-Achillis contracted; fibula fractured 3 inches from lower extremity, and united at an obtuse angle; a considerable slough had formed on heel. After attempting, unsuccessfully, to reduce the displacement, the tendo-Achillis was cut and another unsuccessful attempt at reduction made. An incision was now made from the internal malleolus forwards to the base of the first metatarsal bone, 2½ inches long. The joint was exposed and the following condition found. The tip of the internal malleolus was broken off and ununited, the astragalus was thrown forward and separated completely from the tibia and fibula, with the exception of the internal ligament, which was attached to the broken portion of the internal malleolus. Lying between the tibia and fibula, and tightly stretched over the outer side of the astragalus, was the tendon of the tibialis posticus muscle (the anticus was in its place). This had been one of the causes of the failure of efforts at reduction, as the tendon held the bone in place. The tendon was cut, but reduction was still unsuccessfully attempted; so the astragalus was freed from its remaining ligamentous attachments and removed, also the fractured portion of the internal malleolus and the end of the fibula. The foot now came into position, and was dressed with a pad of sublimated jute and a rectangular splint placed on outer side. There was considerable oozing for twenty-four hours.

A small pocket of pus formed at inner side some ten days after the operation; this was opened. The slough on the heel gave considerable trouble; and from that time patient went on

well, though for some time pus continued to burrow up the leg, which had to be freely incised. By the beginning of September the foot was doing well.

Early in October he commenced to move about on crutches, and could put his toes to the ground. He was discharged on Oct. 10th with all the wounds healed with the exception of an ulcer on the heel the size of a 25-cent piece.

I saw the patient in January 1887. He had a suitable boot made, and could walk about and attend to his business comfortably. The ulcer on the heel had completely closed. There was about two inches of shortening.*

CASE II—*Dislocation with Fracture of the Left Astragalus and Compound Comminuted Fracture of Right Tibia and Fibula.*—J. C., aged 22, brakeman, was admitted into the Montreal General Hospital August 8th, 1886, suffering from severe injuries to both legs. He gave the following account of the accident. Whilst "braking" on a freight train, which was going at the rate of between 30 and 40 miles an hour, patient was standing on the top of the last car; the train swept round a curve and threw him off his balance, so to save himself he jumped and landed on his feet. He was picked up and taken to a doctor, who applied temporary dressings to his injured legs and sent him into Montreal to hospital, where he came under my care.

On entrance his condition, taken from the case report by the house surgeon, Dr. Birkett, was as follows: "Upon the right leg, opposite the upper portion of lower third of tibia, a transverse, irregular wound is seen, 2½ inches long, communicating with fractured bone. On examining still further the tibia is found to be splintered into several pieces, whilst the fibula is fractured about its middle third. Pulsations felt both in dorsalis pedis and posterior tibial arteries. Considerable amount of oozing from the wound. On examining the left leg it is found to be much swollen, very painful and tender. The foot is strongly

* This patient was presented to the meeting of the Canadian Medical Association, in Montreal, September 1891, and at that time had a most useful foot, and could walk with very slight limp.

inverted and fixed. Half an inch below and in front of the external malleolus a sharp prominence of bone is felt, over which the skin is tightly stretched. This apparently is a fractured portion of the astragalus which is dislocated outwards. The circulation in foot is good."

The compound fracture of the tibia was treated in the usual way with iodoform and jute pad after thorough irrigation with 1–2000 of bichloride, and, after a few days, put up in plaster-of-Paris, a window being left opposite the wound. The loose pieces of bone had previously been removed, and the wound granulated rapidly with but little suppuration, and there was good union of the bones with about two inches shortening.

At the present time the condition of the left foot interests us more and bears directly on the subject now engaging our attention. The patient was placed under ether and reduction of the displaced fragments of the astragalus attempted, but without result, so, considering the general condition of the patient and the other injuries, no further attempt at reduction was made, the foot being put up in a splint and kept at rest. On the 4th of September, the general condition of the patient being favourable, the left foot was again examined. On removing the dressings it was found that the skin over the projecting portion had sloughed, and that the broken bone projected through an ulcer about the size of a 25-cent piece. It was at once decided to remove the astragalus; so the patient being placed under ether, an incision was made from the external malleolus downwards and forwards for some two inches, and through this incision the three portions into which the astragalus was broken were easily removed. The anterior and posterior portions were quite free, whilst the central fragment, which corresponded to the portion covered by the lower end of the tibia, was attached to the inner malleolus by the internal lateral ligament, and there was no fracture of either malleoli. The wound was stuffed with sticky iodoform gauze and covered with a jute pad, a back splint being applied.

The progress of the case was most satisfactory, the wound having completely healed by November 14th and motion of foot

good. Patient was going about the ward on crutches by 18th January, and was discharged from hospital on Feb. 5th, 1887, with good union of right leg and excellent motion of right foot. He walked well without a limp, the shortening (two inches) being the same in both legs. We could not have told by his gait that he had suffered from such a severe accident. I have heard of him several times since, and he is gate-keeper on one of the railway crossings. I am told that he walks without fatigue and without any limp. In this case removal of the bone was necessitated by the character of the fracture, for had the parts been left, the anterior and posterior fragments would surely have necrosed and led to greater trouble. The result of the case was in every way satisfactory.